

**Abstract**

A robot which incorporates a body, and sensors that allow the robot to interact with objects in the room, and prevents the robot from traveling off an edge or bumping into obstacles. A driving mechanism moves the robot along a surface. An edge detection system includes a plurality of infrared emitters each directed at a different angle with respect to the surface. The emitters alternately emitting signals such that only one of the emitters emits a signal at one time. A signal receiving device detects signals emitted by the infrared emitters after the signals have been reflected. The edge detection system detects an edge based on feedback received from the signal receiving device.